

- a) Record all your observations in the table in your log.
- b) Using your data and the descriptions of the kinds of mixtures in the ChemTalk reading section, classify each of the mixtures as a solution, colloid, or suspension.

5. Discard materials and return all equipment as directed by your teacher. Clean up your station and wash your hands.

ChemTalk

CLASSIFYING MIXTURES

In this activity you mixed together water and several different materials to produce different kinds of mixtures. In some cases the materials you used were **pure substances**. A pure substance contains only one kind of particle throughout. For example, sugar is a pure substance. A mixture contains at least two pure substances. You may think of water as a pure substance, however most water found in nature has different materials mixed with it and is in fact a mixture.

Mostly all materials that you find in nature, as well as most human-made materials are mixtures of one or more pure substances. You made one kind of mixture, called a **solution**, when you added sugar to water. In a solution, the particles that dissolve are so tiny they can be seen with the naked eye. The mixture is said to be homogeneous. The dissolved particles (called the **solute**) remain mixed forever with the solvent. The water, since it is doing the dissolving in this case, is the **solvent**. If a solution is filtered, everything passes through. Light passing through a solution has no special effect.

When you added milk to water, the water appeared cloudy. However the tiny drops of milk remained suspended in the water and did not

Chem Words

pure substance: a substance that contains only one kind of particle.

solution: a homogeneous mixture of two or more substances.

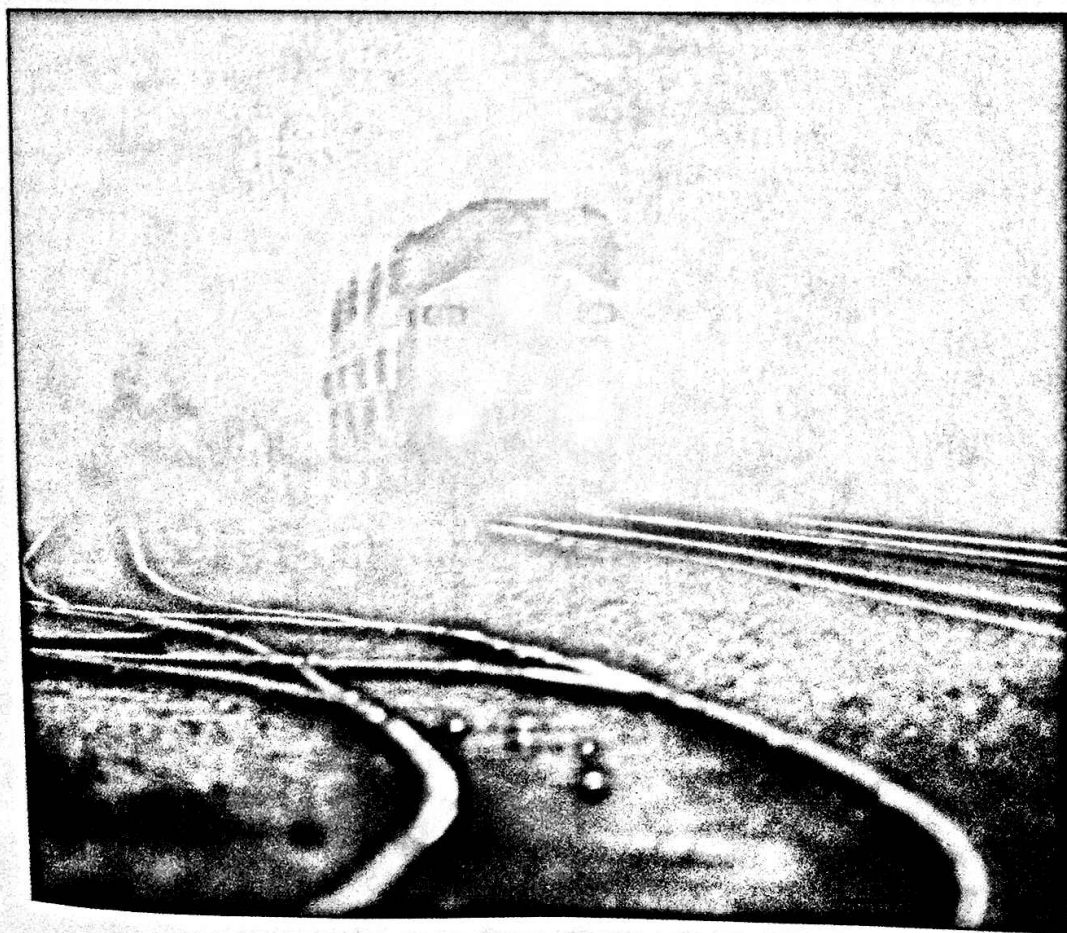
solute: the substance that dissolves in a solvent to form a solution.

solvent: the substance in which a solute dissolves to form a solution.

settle out over time. You could see the laser beam as it passed through the mixture, and when you filtered the mixture, it all passed through the filter paper. This kind of mixture is a **colloid**. In colloids, the dispersed particles are larger than those in solution and may be visible on close inspection with a microscope. The particles will also stay suspended indefinitely. All parts of the colloid will pass through a filter. When light passes through a colloid it is scattered and you can see where the light beam passes through. This is known as the **Tyndall Effect**.

When you added soil to water, you created a suspension.

Suspensions have the largest of all the dispersed particles. The particles are visible to the eye and will settle out in time. The suspended particles can be separated by filtration. The mixture is said to be heberageous. A light beam shining through a suspension may be scattered, but the suspension is definitely not transparent.



Chem Words

colloid: a mixture containing particles larger than the solute but small enough to remain suspended in the continuous phase of another component. This is also called a colloidal dispersion.

Tyndall Effect: the scattering of a light beam as it passes through a colloid.

suspension: heterogeneous mixture that contains fine solid or liquid particles in a fluid that will settle out spontaneously. By shaking the container they will again be dispersed throughout the fluid.

Checking Up

1. In your own words describe how you would distinguish among a solution, a colloid, and a suspension.
2. What is the Tyndall Effect?